RAPTOR AND WATERFOWL MONITORING

ON

THE OLDMAN RIVER RESERVOIR

1995 Report Prepared For:

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Executive Summary

This report covers the monitoring of birds of prey and waterfowl on and adjacent to the Oldman River Reservoir during the spring of 1995.

The study includes the monitoring of the Wildlife Control areas which were established in 1994 specifically to protect breeding pairs of Prairie Falcon *Falco mexicanus* and Golden Eagle *Aquila chrysaetos* nesting on the banks of the reservoir. The Wildlife Control areas , the birds they contained and human activity were monitored early in the breeding season. Less intensive monitoring was also carried out throughout the breeding season relative to Common Loons *Gavia immer*, and colonial species known to be sensitive to human interference.

In the current year approximately 150 hours were spent in the field monitoring waterfowl in the small check dams and breeding raptors associated with the dam. Breeding territories of eight Prairie Falcon, two Golden Eagle, two Ferruginous Hawk, one Osprey and one Common Loon were occupied and monitored during the 1995 breeding season. Seven of the eight Prairie Falcon territories contained pairs that attempted to nest in the current breeding season. Of these only five pair produced young. 21 Prairie Falcon nestlings, were caught and banded. In addition nesting territories of eight pair of Red-tail Hawk *Buteo jamaicensis*, one pair of American Kestrel *Falco spaverius*, one pair of Marsh Hawk *Circus cyaneus* and one pair of Swainson's Hawk *Buteo Swainsonii*, were recorded in or adjacent to the study area.

Two pair of Golden Eagles attempted to nest in 1995 neither were successful in fledging young. Limited field observations suggest that the nesting failure of the eagles at Horseshoe Canyon was a natural event and not the result of human interference. No transgressions into the Wildlife Control Areas were observed nor did we see any evidence on human activity. We found no indication that anyone had approached either nest. However the regular presence of people near this site does suggest that the pair downstream of the dam probably deserted due to regular human activity in the area. Disturbance remains a concern with the birds of prey. This was evident again as indicated by the fact that the two Prairie Falcon territories in close proximity to the Dam were subjected to considerable human activity immediately prior to the establishment of territories. As in 1994 although birds were present in the territories at the onset of the breeding season no nesting attempt was recorded. Of specific interest

was the fact that this year we observed little activity at or near the Prairie Falcon and Golden Eagle territories delineated by buoys.

Five artificial holes were occupied during the 1995 breeding season. three by Prairie Falcons. one by Great Horned Owls *Bubo virginianus* and one by Canada Geese *Branta canadensis*,. Four nesting platforms were also utilized, one by Red-tailed Hawks. two by Canada Geese and one by Osprey. Several nest boxes were occupied by Mountain Bluebirds *Sailia currucoides*, and Tree Swallows *Tachycineta bicolor*.

1.0 Introduction

1.1 Background and Rationale

The construction and subsequent flooding of the Oldman River Dam adversely impacted on raptorial birds and other sensitive species nesting in, or adjacent to the reservoir. During the construction phase several pair of raptorial birds nesting in and adjacent to the Oldman, Crowsnest and Castle River valleys were displaced by human activity and habitat alteration associated with the construction and subsequent flooding of the Oldman River Dam[1]. In 1991-92 environmental hearings were held by a Federal Environmental Panel throughout the province. Several concerns were addressed and recommendations were made. The proposals for mitigation and monitoring were initiated in response to concerns that were voiced and in response to the recommendation that the monitoring should be continued, relative to the newly created Wildlife Control Areas.

With the completion of the dam the majority of the less tolerant species have now relocated to alternate natural and/or artificial nest sites in the area. In addition newly created nesting and feeding areas have attracted waterfowl and other sensitive colonial water birds[2].

Following the completion of the dam, human activity has increased significantly and camping, fishing and other water-oriented recreational activities have the potential to subject the resident raptors, colonial birds, and other sensitive species to severe disturbance throughout the breeding season. As the potential for human interference is very real, Wildlife Control Areas were proposed in 1993 and put into effect in the spring of 1994.

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[1] Prairie Falcon *Falco mexicanus*, Ferruginous Hawk *Buteo regalis*, Red-tailed Hawk *Buteo jamaicensis*, American Kestrel *Falco spaverius* and Great Horned Owl *Bubo virginianus*.

[2] As in other years in 1995 the following species were observed on the reservoir. Each of these species has the potential to form large breeding colonies: Canada Goose *Branta canadensis*, Common Tern *Sterna hirundo*, Black Tern *Chlidonias niger*, California Gull *Larus californicus*, Ring-billed Gull *Larus delawarensis*, Western Grebe *Aechmophorus occidentalis*, Eared Grebe *Podiceps caspicus*, Double-crested Cormorant *Phalacrocorax auritus*, White Pelican *Pelicanus erythrorhynchos*.

2. OBJECTIVES

1. To monitor birds of prey and waterfowl in designated areas associated with the Oldman River Dam and Reservoir.
2. To determine the occurrence and progress of nesting colonial species
3. To document the incidence and severity of human disturbance
4. To record biological data relative to the breeding biology, populations and phenology of birds nesting in and associated with the area impacted by the construction and flooding of the Oldman River Dam.
5. To maintain good public relations at every opportunity.

3. METHODS

3.1 Field Observations

3.1.1 Monitoring Birds of Prey and Waterfowl:

The primary focus of the project in 1995 was to monitor populations of birds of prey and waterfowl in selected areas associated with the Oldman River Dam. Monitoring was carried out from the beginning of April through late June for both waterfowl and raptors to provide data on occupancy and nest success. Once nesting territories were established and nesting initiated within the Wildlife Control Areas regular visits were made (weather and roads permitting) to observe the breeding birds and to record any instance of disturbance. All known nest sites were visited regularly and relevant observations recorded.

In order to update biological information, data was kept on all bird species observed in the area. Where possible this documentation included: arrival dates, initiation of nesting, egg laying, hatching and fledging dates and interaction with other species.

Following the heavy rains and general flooding of the area in early June, all raptor nest sites and designated wetland areas were monitored, at this time Prairie Falcons of sufficient age and size were banded.

3.1.2 Inventory of breeding birds of prey

Each year beginning in 1989 raptor breeding inventories and behavioral studies have been carried out. These field investigations were carried out again in the spring of 1995 specifically to locate pairs and individuals occupying known breeding territories, or suitable nesting habitat within 16 km. of the proposed reservoir boundaries. Observations were continued to determine the breeding status and production of all birds of prey in the study area.

3.1.3 Banding

In 1989 and 1990 the Prairie Falcons in the study area were banded with standard USF&W numbered aluminum bands plus combinations of red, blue and black coloured bands. However, from 1991through 1995 subsequent banding of the falcons and Ferruginous has been carried out using only the standard USF&W aluminum bands. All young from three to five weeks of age were banded during the 1995 breeding season.

3.2 Inventory of waterfowl on designated water bodies

In 1995 waterfowl were monitored on specific check dams and impoundment's during April, May and early June. Monitoring consisted of initially observing, identifying and counting all waterfowl from a suitable distance so as to avoid flushing the birds. When possible this was followed by a closer approach by vehicle or on foot to determine if their were additional birds hidden from view or in the adjacent vegetation.

3 3. Inventory of colonial and sensitive species

Each spring there is an influx of migrant species into the area. consequently species composition is somewhat volatile and considerable time was spent monitoring new arrivals. Throughout the season colonial and other sensitive species were inventoried. Particular attention was paid to those species attempting to nest in the area for the first time.

3.4 Monitoring the effect of human disturbance

Beginning in 1989 and continuing to the present all observed instances of interaction between raptors and humans were monitored and documented. This was felt to be of particular relevance as several instances of disturbance were observed

and because earlier studies have documented adverse affects on these two species resulting from various types of disturbance (Fyfe and Olendorff 1976, Call 1978, White and Thurow 1985, Grier and Fyfe 1987). Monitoring procedures have been the same each year and we have simply taken every opportunity to document any disturbance that we observed that could be associated nest desertion. We did not attempt to stop any disturbance encountered, nor to interfere with any observed problem. Our observations of the activities and the subsequent results were simply documented and reported.

In order to determine the effect of human disturbance three priorities were set:

1. To determine if there was any evidence of disturbance during the initial occupancy of nesting territories of the nesting falcons and eagles in the Control Areas. This period is the most critical time for the establishment of territories by raptors and for the initiation of colonization by colonial species.
2. To document the general biology and to monitor natural disturbance affecting the breeding birds. This monitoring was carried out from the onset of nesting fledging for sites in the control areas. Less intensive monitoring was also carried out throughout the breeding season relative to Ferruginous Hawks *Buteo regalis*, Osprey *Pandion haliaetus*, and Common Loons *Gavia immer*; species known to be sensitive to human interference.
3. To document interaction with humans in or adjacent to the Control Areas regardless of the nature of the interaction. Specifically we attempted to determine the relative response by breeding birds to various types of activities in relation to the time in the birds breeding cycle and in relation to such aspects as distance, timing, duration and nature of the activity.

4.0 RESULTS

4.1 Raptor Population Inventory

Prairie Falcons were observed in eight of thirteen available nesting territories during the 1995 breeding season, however, no attempt was made at nesting in two of these territories although birds were observed at or near former nest sites very early in the season.

Three of six Prairie Falcon territories located in the Wildlife Control Areas were occupied during the current year. It is believed all three[3] were successful in fledging young. These include two of the three nest territories still available on the reservoir itself and the Castle\Stevick nest sites which are used alternately in different years. For the first time since 1989 no birds were observed at the Maloff territory. Nest sites in this territory were predated in 1993 and 1994 (apparently by Raccoons) and no attempt at nesting was made this year. Three of six additional known Prairie Falcon territories in close proximity to the reservoir were occupied this year. Two of these successfully fledged young.

The Golden Eagle territory located in the Wildlife Control Area was occupied again this year. The pair were observed during courtship, nest building and early incubation. A second pair of Golden Eagles was observed nesting just east of the Dam in the evergreens above the Mercury Prairie Falcon Site. Nest building, incubation and territorial defence was observed then the pair deserted. These birds were last observed on May 1. Although Ferruginous Hawks were observed in the area only two territories were occupied in the current breeding season. Both territories were located outside of limits of the proposed reservoir but within the study area. Both pair occupied territories and nested however, neither pair were successful in fledging young.

In addition nesting territories of eight pair of Red-tail Hawk, one pair of American Kestrel, one pair of Marsh Hawk and one pair of Swainson's Hawk, were recorded in or adjacent to the study area.

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[3] While the birds at the Lang nest site were still either incubating or brooding small young when we completed the banding. This nest is in one of the control areas and the young should have fledged successfully.

4.1.1 Prairie Falcon Production

Twenty one young Prairie Falcons were produced by five productive pair (Table 1.) for an average of 4.2 young per productive pair, or an average of 3.5 young for six nesting attempts[4] A sixth nest was occupied and the female was observed to be either incubating or brooding small young. This pair nested very late in the breeding season and if successful their young would fledge well into July.. Our observations suggest that the two of the original three pair of falcons immediately below the dam returned to their territories this spring but made no attempt at nesting . I can only suggest that this would probably be the result of human activity in the vicinity of the nest sites just prior to the nesting season..

Table 1.

	1995 IMMATURE PRAIRIE FALCON BANDING		
Location	Male	Female	Date
Days	816-76495 816-76496 816-76497 816-76498	987-46394	06-16-95
1st Porcupine	816-76494	987-46391 987-46392 987-46393	06-16-95
Buffalo Jump East	816-16500 816-16501 816-16502 816-16503	987-46395	06-16-95
Fairbrother's	816-76491 816-76492 81676493	987-46389 987-46390	06-16-95
Castle		987-46396 987-46397	06-16-95

[4] These figures do not include the pair nesting at Langs as we terminated the investigations prior to the completion of this nesting attempt.

4.1.2 Banding

Twenty one nestling Prairie Falcons were captured and banded using regular USF&W lock-on bands (Table 1.). This brings the total to two hundred eleven Prairie Falcons that have been banded in the past six years with ninety seven colour marked (Table 4.). The total includes the nineteen adults caught and individually marked.

4.1.3 Ferruginous Hawk Production

During the current year only two pair of Ferruginous Hawks were found breeding. One pair occupied the nest at Porcupine #2 and the second pair at the Highway site. Both pair were observed on several occasions and the females clearly were incubating prior to the heavy rains. Following the heavy rains in early June no birds were observed at either nest site.

4.2 Inventory of Waterfowl on Designated Water Bodies

In 1995 waterfowl were monitored on specific check dams and impoundments during April, May and early June. Monitoring consisted of initially observing, identifying and counting all waterfowl from a suitable distance so as to avoid flushing the birds. When possible this was followed by a closer approach by vehicle or on foot to determine if their were additional birds hidden from view or in the adjacent vegetation.

(Tables 2a - 2J) Waterfowl Observations on selected ponds and impoundments

Table 2a. Pond (C11-W01)

	April 13	Apr 28	May 2
Osprey		2	1
Loon		2	1
W. Swan	6		
C. Geese	20+		
C. Merganser	15+		16
R. B. Merganser			1
Hooded Merganser			
Ring-necked Duck		6	18
Canvasback		4	4
Bufflehead	15+	2	2
Widgeon	100+		4
G.W. Teal	12		
Shoveler	20		
Horned Grebe		3	

Stevicks

Table 2b. Pond *(C20-C01)*

	Apr 28	Apr 31	May 1	May 23
Golden-eye	1			
Mallard	2	2	2	

Upper [illegible]

Table 2c. Pond (DC05-C03)

	Apr 28	June 16	
Mallard	2	6	
Bufflehead	2		
Shoveler		2	
American Widgeon		2	
B.W. Teal		2	
C. Teal		1	
H. Merganser			
B. Golden-Eye		4	

SE corner DC5

Table 2d. Pond (DC05-W01)

	Apr 28	
Mallard	2	
Pintail		
Gadwall	13	
Shoveler	5	
Bufflehead	5	
Widgeon	4	
G.W. Teal	3	

SW corner DC5

Table 2e. Pond (DC22-W01)

	Apr 28	June 16	
Ring-necked Duck	4		
Shoveler	3		
Horned Grebe	1		
Coot	78		

Shoreline between Tennessee and DC5

Table 2f. Pond (DC17-W01)

	Apr 28	June 16	
Mallard	24	3	
Widgeon	1	1	
Shoveler	5		
G. W. Teal	8		
Gadwall			
Scaup	2		
H. Merganser		1	

Tennessee

Table 2g. Pond (DS51-W01)

	Apr 20	Apr 28	Apr 31	May 23	June 16	
Mallard	62	18	8	3	1	
Widgeon	4	8	2			
L. Scaup				5		
Ring-neck				2		
C. Merganser				5		
B.W. Teal				2		
G.W. Teal	2	2			1	
Goose	1platform	1platform	1platform			

S of Welsh

Table 2h. Pond (DS40-C01)

	Apr 20	Apr 28	May 23	June16	
Mallard	28	54	14	4	
Pintail		15		1	
Widgeon		20			
Shoveler	6	10	4	1	
B.W. Teal			4	1	
G.W. Teal		35			
Cinnamon Teal		1			
Gadwall		3	8	5	
American Widgeon			4	2	
European Widgeon		1			
Ring-necked Duck		12			
Common Golden-eye	2	1			
Bufflehead	10	10	7	5	
Redhead		3			
Scaup	10	24			
Coot			4		
Willet			2		

Peninsula

Table 2i. Pond (DS17-C01)

	Apr 20	Apr 28	Apr 31	May 19	May 23	June 16	
Mallard	8	8	7	4	12	1	
Pintail	2	4	3	2			
G.W. Teal	6	18	9	2			
B.W. Teal					5		
Cinnamon Teal			2			1	
Gadwall					2		
Widgeon			7	2			
Ring-necked Duck	7	8	20	8			
Scaup Duck	4	4	7	2			
Canvasback			8	4			
Golden-eye	1	5	1				
Red-head			1				
Geese (nest)	3 pr.	3 pr	3 pr	3 pr			
H. Grebe					2		
Coots					5	1	

Increasing Club . NW

Table 2j. Pond(DS17-C02)

	Apr 28	April 31	May 19	
Mallard	2	2	1	
Widgeon	2			
G.W. Teal	2	2		
Canada Geese		1	1	

Increasing Club - S

4.3 Inventory of Colonial birds and other Sensitive Species.

In the current year the following colonial species were observed in the area:

- *Western Grebes* were first observed on late April and were subsequently observed in several areas of the reservoir. These birds were only observed for a few weeks at most. We did not observe any attempt at nesting.

- *Double-crested Cormorants* were first observed on the reservoir on early May and were seen almost daily thereafter. The majority of these birds apparently were non breeders and no attempt at nesting was observed

- *Common Loon* first observed on the reservoir on Apr 28. Individuals were observed in several areas on all three arms of the reservoir and as in 1994 one pair established a breeding territory and nested on one of the Stevik Ponds this nest was apparently lost during the flooding in June as the pair were not seen on the pond following the flood.

California Gulls, Common Terns, and Black terns were observed on the reservoir on different occasions but appeared to be using the area as a loafing and or feeding area only.

4.4 Disturbance

As in other years all breeding pairs were subject to a wide range of natural disturbance and varying degrees of human related disturbance (Table 3). However in 1994 and again in 1995, following the implementation of the Wildlife Control Areas and the placement of the signs we did not record a single instance of transgression into the areas that had be marked as off-limits to the public.

Table 3.

PRODUCTIVITY AND DISTURBANCE AT KNOWN PRAIRIE FALCON BREEDING TERRITORIES FOR 1995

NEST SITE	1985 NEST # (Young et al. 1986	PRODUCTIVE IN 1995	DISTURBANCE
Old Bridge	#48	N	Minimal
Mercury	#45	N	Severe[1]
Dam[1]	#42	N	Severe[1]
Buffalo Jump E.	#40	Y	Minimal
Buffalo Jump W.[2]		N	Minimal
Fairbrother		Y	Minimal
Lang		Y	Moderate
Days		Y	Moderate
1st Porcupine[R]		Y	Minimal
Maloff	#12	N	Minimal
Castle[R2]		Y	Minimal

[1] suspected relocation from former #42
[2] second nest site within an established territory
[R] pair relocated from Days.

PRODUCTIVE = productive in the 1995 season
DISTURBANCE = relative level of documented disturbance
NEST SITE = Names given to known breeding territories
= Corresponds to nest numbers given in earlier reports by Young

As in 1994 and in contrast to 1993 the incidence of disturbance to breeding raptors was greatly reduced. Our observations suggest only minimal to moderate disturbance at any nesting site on the reservoir. In contrast the two nest sites immediately downstream of the dam were subjected to considerable human activity prior to the nesting season and both pair failed to nest. It was interesting to note that whereas falcons were observed in both territories prior to the 1994 breeding season, only one pair was observed in 1995 and apparently there was no attempt to nest.

Ferruginous Hawks were only observed in the two occupied territories in 1995. As in the past four years the Ferruginous in the study area have been subjected to little human interference and our observations suggest that their production has not been influenced by disturbance.

Table 4.

ARTIFICIAL AND IMPROVED CLIFF NESTING SITES 1989 -1995				
	Artificial holes	Utilized by Prairie Falcons	Utilized by other species	Total Occupied
Available in 1989	15	1	1 Raven 1 Canada Goose	3
Available in 1990	+32 = 47	3	1 Canada Goose 1 G.H. Owl	5
Available in 1991	+3 = 50	4	2 Canada Geese 1 G.H. Owl	7
Available in 1992	50	3	1 Canada Goose 1 G.H. Owl 1 Raven	6
Available in 1993	+1 = 51	5	1 Canada Goose 1 G.H. Owl	7
Available in 1994	= 51	4	1 Canada Goose 2 G.H. Owl	7
Available in 1995	= 51	3	1 Canada Goose 1 G.H. Owl	5
Total	51	23	17	40

4.5 Utilization of Artificial Nest Sites

Table 4. summarizes the utilization of the artificial cliff nesting sites since 1989. Five artificial holes were occupied during the 1995 breeding season, three by Prairie Falcons, one by Great Horned Owls and one by Canada Geese. The three Prairie Falcons and both the geese and the owls nested successfully.

Prior to the 1991 breeding season nineteen nest platforms were constructed and placed on tree stumps or poles in selected sites along the banks of the reservoir or on areas destined to become islands with the flooding of the reservoir. In 1995 four platforms were used successfully, three by Canada Geese and one by a pair of Osprey[5].

[5] The osprey were apparently brooding small young at the time we terminated the investigations. The platform and nest weathered the storms and flooding and the pair should have been successful in fledging young in 1995

5.0 DISCUSSION

5.1 Monitoring Birds of Prey and Waterfowl

Without question 1995 proved to be a most difficult year to attempt to monitor the raptor and waterfowl populations associated with the Oldman Reservoir. Initially our field observations suggested that the Prairie Falcon. Ferruginous Hawk. Kestrel and Marsh Hawk populations were the lowest we had recorded since 1989. On the positive side we recorded a new Golden Eagle pair nesting just below the dam and Ospreys nested for the first time on the platforms at Stevick's. We began monitoring waterfowl on the designated areas but for the remainder of the season because of the heavy rainfall and resulting poor driving conditions we found it impossible to visit all of the ponds in such a way that we could observe them from a distance without flushing the birds. In late May and early June although there were up to nine broods of Canada Gees on the Stevick ponds we saw no broods of ducklings and relatively few broods of Canada Geese on the designated areas. Following the heavy June rains and floods we observed neither goslings nor ducklings on the designated areas. .

5.1.1 Prairie Falcons

Prairie Falcons were observed in four of the control areas where nesting territories had been known previously. However, pairs established in only three of these areas (including the pair that relocated just outside of the control area at Stevick's). It is likely that all three successfully fledged young during the current breeding season. Seven territories were occupied by breeding pairs but only six succeeded in fledging young (this includes the pair at Langs). Production was excellent for these few productive pairs. The resulting fledging success of 3.8 young per successful pair of Prairie Falcons is well above what is normally considered good fledging success (3.1 or 3.2 per successful pair as reported in Idaho by Ogden (1973) and the Pawnee Grassland in Colorado by Olendorff (1973). Unfortunately the overall production is down to 2.8 with only six of the eight nesting attempts succeeding. Fortunately neither of the two nest failures appears to have been related to human interference as both sites are relatively inaccessible and at no time during the season did we observe people at or near the nests.

TABLE 5.

PRAIRIE FALCON BREEDING TERRITORIES 1989, 1990, 1991, 1992, 1993, 1994, 1995

NEST SITE	PRS 89 90 91 92 93 94 95	IND 89 90 91 92 93 94 95	COURT 89 90 91 92 93 94 95	COP 89 90 91 92 93 94 95	EGGS 89 90 91 92 93 94 95	YNG FL 89 90 91 92 93 94 95
Old Bridge	Y Y Y Y Y Y Y		Y Y Y Y Y Y Y	Y Y Y	5 5	4 4 5
Mercury	Y Y Y Y[A]	Y	Y Y		4 4	4 3
Dam[1]	Y	Y	Y			
Buffalo	Y Y Y Y Y Y Y		Y Y Y Y	Y Y Y	5 5	4 5 4 5 5 5
Buffalo	Y Y Y Y Y	Y	Y Y Y Y Y	Y Y Y Y	3 3 3	
Fairbrother's	Y Y Y Y Y Y Y		Y Y Y		5 5	3 3 3 5 5 5
Bitango	Y		Y			4
Bitango	Y Y		Y			5
Tennessee	Y Y Y	Y			4	4 4
Lang	Y Y Y Y Y Y	Y Y	Y Y Y	Y Y	3	1 5 4 (?)
[illegible]ch	Y Y Y	Y	Y Y		4	4 4
Days	Y Y Y Y Y Y		Y	Y	5	2 3 3 5
1st Porcupine	Y Y Y Y Y Y		Y Y Y	Y		5 4 5 5 1 4
Double Ox-	Y Y Y	Y	Y		Y[I]	
Horseshoe	Y Y Y Y		Y	Y	5 4	4 4 3 5
Horseshoe#2	Y					2 2
Maloff	Y Y Y Y Y Y		Y Y	Y	4	3 4 1
Stevick	Y Y	Y Y Y			5	5 5
Castle Dairy	Y Y Y Y Y		Y	Y	5 5 5	4 4 4 5 2

[1] suspected relocation from former #42
[2] second nest site within an established territory
[R] pair relocated from Days
[I] female observed incubating
[A] alternate site in same territory

NEST SITE = Names given to known breeding territories
PRS = pairs observed on territory
IND = individual birds observed to remain in a territory
COURT = courtship behaviour observed
COP = copulation observed
EGGS = number observed, most nests not climbed in incubation
YNG FL = number of young known to have fledged

5.1.2 Ferruginous Hawks

In 1985 a single pair of Ferruginous hawks was recorded nesting in the area to be impacted by construction activity. After relocating twice, this pair has nested each year since 1989 at a site approximately four kilometers from the dam. In 1990 and 1991 Ferruginous were recorded at two other locations within the study area but away from the reservoir. Then in

TABLE 6.

FERRUGINOUS HAWK BREEDING TERRITORIES 1989, 1990, 1991, 1992, 1993,1994,1995

NEST SITE	PRS 89 90 91 92 93 94 95	IND 89 90 91 92 93 94 95	COURT 89 90 91 92 93 94 95	COP 89 90 91 92 93 94 95	YNG FL 88 90 91 92 93 94 95
Feedlot	Y	Y		Y	
Highway	Y Y Y Y Y Y Y		Y Y Y		3 2 2 3 2
1st Porcupine[1]	Y Y Y Y		Y Y Y	Y Y Y	3 Y
Porcupine #2	Y Y Y Y Y Y Y		Y Y Y	Y	3 4 4 4 Y
Porcupine #3	Y		Y		
Porcupine #4	Y Y Y				2

1 this pair appears to have relocated from 1st Porcupine to the platform beside reservoir.

1992 and again in 1993 new pairs established territories and nested within the study area but again away from the reservoir. This brought the total Ferruginous nesting in the study area to five all nesting some distance from the reservoir. Then in the 1994 field season a pair of Ferruginous Hawks were observed utilizing one of the nest platforms immediately adjacent to the reservoir. It appears that this pair relocated roughly 1.5 km from their former nesting territory on 1st Porcupine. In the current year only two pair of Ferruginous were observed. Both pair nested and both pair apparently deserted as a result of the heavy rains in early June. As in the previous three years our observations indicate that the Ferruginous Hawks within the study area have been subjected to a minimum of human disturbance. We have found no evidence to suggest that human interference has affected the nest success of these birds during the past four years.

5.2 Wildlife Control Areas.

Six of seven control areas on the Oldman River Reservoir were established specifically to protect nesting birds of prey. In 1994 the areas were demarked, legislation was put forward and this project was subsequently undertaken to determine their effectiveness in protecting the breeding birds of prey. Three of the control areas were utilized in the 1995 breeding season, two by Prairie Falcons and the fourth by the pair of Golden Eagles. Also as in 1994 the pair of Prairie Falcons normally utilizing the cliffs at the Stevick's East Control Area relocated approximately 1 km. south and nested in an artificial hole just outside of the area included in the control area designation.

We did not observe any transgressions into the areas that were delimited by the buoys or markers. Although both pair of eagles failed in their nesting attempts it appears the nest failures resulted from totally different causes. Whereas it is likely the new pair below the dam deserted due to continued human activity there is no evidence to indicate that the failure of the Horseshoe pair was due to human interference. Our observations confirmed that the pair occupied the territory, copulated and layed using last years nest. Incubation progressed with both pair until they deserted.

5.3 Colonial and Sensitive Species

During the 1995 breeding season Western Grebes, Double-crested Cormorants, Common Tern, Black Tern, White Pelicans and Common Loons were all observed on or adjacent to the reservoir. Of these only the Common Loon and Double-crested Cormorants remained into the breeding season and both species, loons and cormorants, were observed at several locations on the reservoir. However, they were primarily associated with the ponds at Stevick's and as in 1994 it was here the Common Loons again nested only to be flooded out in June.. The pair were incubating in late May but were not observed following the flooding. As in previous years it appeared that the majority of the Cormorants were non breeders and no nesting attempts were observed.

The White Pelicans observed flying over the reservoir in late May were probably non-breeding birds, or birds that were breeding elsewhere and were simply coming to the reservoir to feed. The California Gulls, Common Terns and Black terns observed on the reservoir appeared to be using the area as a loafing and/or feeding area only.

5.4 Disturbance

In the 1989 report I suggested that next to the actual destruction of nest sites by flooding, the most serious problem for both the Prairie Falcon and the Ferruginous Hawks would probably be disturbance. As in previous years we have taken every opportunity to document any disturbance that could be associated to nest desertion, however as in the past we did not attempt to stop such disturbance when encountered nor to interfere with any observed problem. Our observations of the activities and the subsequent results were simply documented and reported.

TABLE 7.

PRODUCTIVITY AND DISTURBANCE AT KNOWN FERRUGINOUS BREEDING TERRITORIES -1989, 1990, 1991, 1992, 1993, 1994, 1995

NEST SITE	1985 NEST #	NEST SUCCESS 89 90 91 92 93 94 95	DISTURBANCE
Feedlot		not occupied	Minimal
Highway[1]	#47	Y Y Y Y Y Y Y	Minimal
Porcupine Hill		N N N Y Y Y	Minimal
Platform[2]		Y N	
Porcupine #2		Y Y Y Y Y Y N	Minimal
Porcupine #3		Y N N	Minimal
Porcupine #4		N N	Minimal

[1] suspected relocation from former #42

[2] alternate nest for Porcupine Hill

NEST SITE = Names given to known breeding territories

= Corresponds to nest numbers given in earlier reports by Young et al 1986

NEST SUCCESS = Indicates whether a nest site was productive or not

DISTURBANCE = relative level of documented disturbance

Our observations suggest that with the exception of the territories downstream of the dam human interference was minimal during the current year. Our observations suggest that the public respected the Wildlife Control Areas and our field observations indicate that both the falcons and eagles nesting in the control areas were not subjected to any serious disturbance from people. During the current breeding season, the most serious human interference affecting raptors occurred unintentionally prior to the breeding season at the golden eagle and two Prairie Falcon territories immediately downstream of the dam.

5.5 Artificial Nest Sites

As noted in 1993, following the flooding of the reservoir several of the original nest sites are no longer available. However, for those territories where nest sites have remained or where artificial sites are available the breeding pairs returned and utilized both natural and artificial holes in their original territories. Other pairs either relocated or returned to old territories outside of the reservoir. A total of five artificial holes were occupied during the current breeding season, three by Prairie Falcons, one by Great Horned Owls and one by Canada Geese.

Four nesting platforms were also utilized for nesting in 1995, three by Canada Geese and one by Osprey. Several others were utilized as feeding platforms and hunting perches. Ospreys were observed frequently using the poles as perch points in May and early June.

6.0 RECOMMENDATIONS

1. I recommend that, if possible, the Wildlife Control Areas below the Dam be put into effect enforced no later than March 15 and if occupied by falcons or eagles the areas should remain in effect through the end of June each year. This would provide both golden Eagles and Prairie Falcons the opportunity to establish territories and nest with a minimum of disturbance during this critical period. Once the birds have hatched their young, the regulations could be relaxed and people could travel and fish on the opposite side of the river.
2. In order to provide a relatively disturbance free environment during nesting and incubation for the falcons, osprey, loons and cormorants the wildlife control areas should be enforced.
3. Where possible, it would be desirable to coordinate planned recreational activities to minimize disturbance and maximize the recreation and educational potential of the breeding raptors and colonial species.
4. It would still be desirable to establish an observation shelter and information board in one of the recreational areas, where the public can observe the Prairie Falcons, Osprey or Red-tailed Hawks through spotting scopes.

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Appendix 1. Summary of Oldman Prairie Falcon Nest Data

Prairie Falcon Nest Occupancy 1969-1995

	68	69	70	71	72	73	74	75	76	77	78	80	85	86	87	89	90	91	92	93	94	
OB	F	F	O	F	F	F							F	F	F	S	F	F	F	F	F	F
ME	F	F	F	S		F		F	F	F	F	F	F	F	F	F	F	F		F		
DAM			F	F			F				F	F	S	S		F		O		S		
BJE	F	F					F		F	F	F	S	F	F	F	F	F	F	F	F	F	
BJW														U	U	F	F	F	F	F		
BBR													F	F	F	F	F	O				
BEA														U	U		F					
TEN														U	U	S	F	F	F			
LAN	F	F	O	O	O	O	O	O	O	O	O			U	U	F	F	F	S	F	F	F
WEL					F	F	O	F	O	F	F		F	U	U	F	F	F	S			
HO1							F	F	F	F	S		F	U	U	F	F	F	F			
F																	F					
MAL							F	F	F	F			F	U	U	F	F	F	F	F	F	
CD																F	F	F	O	O	F/O	
STE																	S	S	F	F	O	
DAY																F				F	F	
1P																	F	F	F	F	F	
DOX													F			F		F	S			
FA		F	F	F	F	F	F	F	F	F	F	F	U			F	F	F	F	F	F	

#F	4	5	3	4	2	4	5	5	5	6	6	4	8	5?	4?	15	13	13	12	10	8	
#S						1					1	1	1	1			3	1	3	1		
#O			2	1	1	1	2	1	2	1	1							2	1	1	2	

F - Pair of Prairie Falcons on territory

S - A single Prairie Falcon on territory

O - Pair of Great Horned Owls nesting in the territory

Shading - Prairie Falcon territories flooded by the reservoir

APPENDIX 3. Birds identified in the study area 1989-94

Western Grebe *Aechmophorus occidentalis*
Red-necked Grebe *Podiceps grisegena*
Eared Grebe *Podiceps caspicus*
Horned Grebe *Podiceps auritus*
Double-crested Cormorant *Phalacrocorax auritus*
Great Blue Heron *Ardea herodias*
Whistling Swan *Cygnus columbianus*
Trumpeter Swan *Cygnus buccinator*
Canada Goose *Branta canadensis*
Snow Goose *Chen hyperborea*
Mallard *Anas platyrhynchos*
Gadwall *Anas strepera*
Northern Pintail *Anus acuta*
Green-winged Teal *Anas carolinensis*
Blue-winged Teal *Anas discors*
Cinnamon Teal *Anas cyanoptera*
American Widgeon *Mereca americana*
Shoveler *Spatula clypeata*
Wood Duck *Aix sponsa*
Canvasback *Aythya valisineria*
Ring-neck Duck *Aythya collaris*
Lesser Scaup *Aythya affinis*
Barrow's Goldeneye *Bucephala islandica*
Common Goldeneye *Bucephala clangula*
Bufflehead *Bucephala albeola*
White-winged Scoter *Melanitta deglandi*
Ruddy Duck *Oxyura jamaincensis*
Common Merganser *Mergus merganser*
Red-breasted Merganser *Mergus serrator*
Hooded Merganser *Lophodytes cucullatus*
Sora Rail *Porzana carolina*
American Coot *Fulica americana*
Killdeer *Charadrius vociferus*
Greater Yellowlegs *Tringa melanoleuca*
Spotted Sandpiper *Actitis macularia*
Marbled Godwit *Limosa fedoa*
Willet *Catoptrophorus semipalmatus*
Wilson Phalarope *Phalaropus tricolor*
Long-billed Curlew *Numenius americanus*
California Gull *Larus californicus*
Ring-billed Gull *Larus delawarensis*
Common Tern *Sterna hirundo*
Black Tern *Chlidonias niger*
Sharp-shinned Hawk *Accipiter striatus*
Cooper Hawk *Accipiter cooperii*
Goshawk *Accipiter gentilis*
Red-tailed Hawk *Buteo jamaicensis*
Swainson's Hawk *Buteo swainsoni*
Rough-legged Hawk *Buteo lagopus*
Ferruginous Hawk *Buteo regalis*
Golden Eagle *Aquila chrysaetos*
Bald Eagle *Haliaeetus leucocephalus*
Northern Harrier *Circus cyaneus*
Osprey *Pandion haliaetus*
Prairie Falcon *Falco mexicanus*
Peregrine Falcon *Falco peregrinus*
Richardson's Merlin Falco *columbarius richardsoni*
American Kestrel *Falco sparverius*
Grey Partridge *Perdix perdix*
Mourning Dove *Zenaida marcroura*
Rock Dove Columa livia
Great Horned Owl *Bubo virginianus*
Short-eared Owl *Asio flammeus*
Long-eared Owl *Asio otis*
Burrowing Owl *Athene cunicularia*
Common Nighthawk *Chordeiles minor*
Ruby-throated Hummingbird *Archilochus colubris*
Belted Kingfisher *Ceryle alcyon*
Common Flicker *Colaptes cafer*
Hairy Woodpecker *Dendrocopos villosus*

Downy Woodpecker Picoides pubescens
Yellow-bellied Sapsucker *Sphyrapicus varius*
Eastern Kingbird *Tyrannus tyrannus*
Western Kingbird *Tyrannus verticalis*
Say's Phoebe *Sayornis saya*
Western Wood Pewee *Contopus sordidulus*
Least Flycatcher *Empidomax minimus*
Horned Lark *Eremophila alpestris*
Tree Swallow *Tachycineta bicolor*
Northern Rough-winged Swallow *Stelgidopteryx serripennis*
Bank Swallow *Riparia riparia*
Barn Swallow *Hirundo rustica*
Cliff Swallow *Petrochelidon pyrrhonota*
Common Raven *Corvus corax*
Common Crow *Corvus brachyrhynchos*
Black-billed Magpie *Pica pica*
Gray Jay *Perisoreus canadensis*
Clark's Nutcracker *Nucifraga columbiana*
Black-capped Chickadee *Parus atricapillus*
Red-breasted Nuthatch *Sitta canadensis*
Rock Wren *Salpinctes obsoletus*
House Wren *Troglodytes aedon*
Catbird *Dumetella carolinensis*
American Robin *Turdus migratorius*
Veery *Hylocichla fuscescens*
Mountain Bluebird *Sialia currucoides*
Ruby-crowned Kinglet *Regulus calendula*
Sprague's Pipit *Anthus spragueii*
Bohemian Waxwing *Bombycilla garrulus*
Cedar Waxwing *Bombycilla cedrorum*
Northern Shrike *Lanius excubitor*
Starling *Sturus vulgaris*
Yellow Warbler *Dendroica petechia*
Common Yellowthroat *Geothlypis trichas*
Yellow-rumped Warbler *Dendroica coronata*
Red-winged Blackbird *Agelaius phoeniceus*
Yellow-headed Blackbird *Xanthocephalus xanthocephalus*
Brewer's Blackbird *Euphagus cyanocephalus*
Western Meadowlark *Sturnella neglecta*
Common Grackel *Quiscalus quiscula*
Brown-headed Cowbird *Molothrus ater*
Vesper Sparrow *Pooecetes gramineus*
Savannah Sparrow *Passerculus sandwichensis*
Clay-colored Sparrow *Spizella pallida*
Dark-eyed Junco *Junco hyemalis*
Pine Siskin *Spinus pinus*
American Goldfinch *Spinus tristis*

Phenology Table - updated [illegible] 1995 field season

Species	Arrival	Courtship	Copulation	Nesting or Egg l aying	Incubation (early)	Incubation (late)	Hatching estimate	Small Yng	Large Yng	Fledged
Loon	April 28		May 15	May 30	June1	June 20	July 1			
Western Grebe	April 26	May 14								
Horned Grebe	April 20			May 22						
Eared Grebe	April27	May 15	May 15	May 15	June 9					
Pied Billed Grebe		May 16		May 21						
Cormorant	April 28									
G. B. Heron	March 30	April 10	April 12	April 22	April22	May 31	May 10 June1	June 4	July 5	
Night Heron										June 25
Whistling Swan	Mar 10									
Trumpeter Swan	April 14									
Canada Goose	March 6	March 21		March 31	Apr 3	May 14	May 10	May 18	May 26	
Snow Goose	Apr26 - May 5									
Wood Duck	April 15			May 26	May 28					
BW Teal	April 18	April 18								
GW Teal	April 6			May 13						
Cinnamon Teal	April 19			May 5						
Shoveler Duck	April 13									
Ring-necked Duck	April 26									
Common Golden-eye	March 25									
Barrows Golden -eye	April 12	April 14- May 16			May 18					
Bufflehead	March 29									
White-winged Scoter	June 17									
Common Merganser	March 29									
Red-breasted Merganser	April 4									
Hooded Merganser	April 18									
Ruddy Duck	May 4	May 20								
Osprey	April 13	April 30 May 10	May 13	May 19		June 17	June 15	June 17		
Bald Eagle	Feb 27 - April 7									
Goshawk	March 25- April 8									
Golden Eagle	Resident	Feb 28- April12	March 30	March 28	April 1	May 4	May 6	May 14	July5	

Species	Arrival	Courtship	Copulation	Nesting or Egg Laying	Incubation (early)	Incubation(late)	Hatching estimate	Small Yng	Large Yng	Fledged
Sharp-shinned Hawk	April 15 - May 15									
Red tailed Hawk	Mar 10			April 19						
Ferruginous Hawk	March 27	March 31- April 14	April 6- May1	April 13- April 20	April 20	May 25	May 27	June1	June28 (5-6wks)	
Swainson's Hawk	April 15	May1- May 14	April 24 May 12-	May 9	May 15?	June 20	June 20			
Rough-legged Hawk	March 11- April 24									
Prairie Falcon	Resident	March 6 - April 20	Apr 3 - April 14	April 15	April 14	May 21	May 24	May 21	June 14(5wks)	June 16
Merlin	Resident	April 18				June 16				
Kestrel	March 25	April 7 - May 13	April 14 - June 12	April 17	May 8	May 30	June 5		July 5	
Ring-billed Gull	April 13									
Coot	April 13		May 22							
Killdeer	Mar 11		May 9						June 28 (½ grown)	
Curlew Long-billed	April 16	April 23		April 30	April 13	May 24	June 1	June 12 (10 days±)	June 28 (½ grown)	
Marbled Godwit	May 11							June 3		
Avocet	May 11				June 1		June 17			
Willet	May 11									
Upland Sandpiper							June 15			
Lesser Yellow-legs	April 31									
Wilson's Snipe	April 13									
Spotted Sandpiper	May 10	May 17		May 25	May 30	June 12				
Wilson Phalarope	May 1	May 15								
Black Tern	May 14								June 12	June 28
Mourning Dove	May 12			May 14	June 4 March 25	April 19	April 20	May 1	May 11	June 12
GH Owl					May 1					
Short Eared Owl	April 11							June 25		
Burrowing Owl	May -11									
Ruby-throated Hummingbird	May 10									
Kingfisher	April 19	April 19	April 28	May 5?	May 10?	May 30?	June 5?	June 6?	July 5	
Flicker	March 17		April 16	April 23						
Yellow-bellied Sapsucker	May 10									
Loggerhead Shrike						June 1	June 17 renest		June 25	

Species	Arrival	Courtship	Copulation	Nesting or Egg Laying	Incubation (early)	Incubation(late)	Hatching estimate	Small Yng	Large Yng	Fledged
Wood Pewee	June 7				June 19	July 4				
Western Kingbird	Apr 15				June 7	June 28				
Eastern Kingbird	May 12				June 6					
Say's Phoebe	April 14									
Horned Lark	Feb 26	April 15								
Cliff Swallow	April 11			June 1		July 11				
Tree Swallow	April 11			May 9						
Bank Swallow	April 19			June 2						
Barn Swallow	May 2									
Rough-winged Swallow	April 13			May 31						
Raven	Resident	March 26-April 6		April 8	April 19	April18	April 19	May 1	May 30 (¾ grown)	June 6-June 17
Crow	March 21									
Clarke's Nutcracker	March 9									
Red-breasted Nuthatch	April 20									
House Wren	May 14	May 14								
Rock Wren	May 28	May 31								
Golden-crowned Kinglet	April 19									
Mountain Bluebird	March 29				May 12-31	June 4		June 2		
Robin	March 9			May 20	May 21				June 1	June 7
Townsend's Solitaire	May 15								June 25	
Brown Thresher										
Catbird	June 6									
Veery	June 7									
Cedar Waxwing	May 30									
Bohemian Waxwing	March 9									
Water Pipit	April 31									
Starlings	Feb 26									
Common Yellow Throat	June 2									
Yellow Warbler	May 20									
Yellow-rumped Warbler	April 23									
Wilson Warbler	May 20									June 25
Meadowlark	March 24									June 28
Red-winged Blackbird	April 13									
Yellow-headed Blackbird	April 13									

Species	Arrival	Courtship	Copulation	Nesting or Egg Laying	Incubation (early)	Incubation (late)	Hatching estimate	Small Yng	Large Yng	Fledged
Brewer's Blackbird	May 1			May 14	May 31	June 14			June 14	
Cowbird	May 2									
Grackel	May 1									
Northern Oriole	May 19	June 4								
Vesper Sparrow	April 23	May 12			June 14					
Chipping Sparrow	May 12									
Savannah Sparrow	April 23	May 1								
Song Sparrow	May 7									
Junco	March 30									
Chestnut Collared Longspur		June 17 c flights								
Goldfinch	May 23	June 7								

Mammals

Ground Squirrels - earliest dates observed
- Richardson',s - **March 9**
- Columbian - **April 28**
- Thirteen-striped - **May 22**

Marmot
- first sighting - **April 9**
- small young - **May 15**

Red Fox young
- a female fox and 2 yng est 8 wks old - **April 20**
- estimate 12 weeks old - **May 16**

Badger
- young ¾ grown (age ?) - **June 14**

Mule deer
- newly born young - **June 10**
- doe with two fawns able to run - **June 28**

Prong-horned Antelope
- Half grown young with small herd